

galls on the leaves or staminate flowers, the problem is greatly simplified. Leaf galls of this generation mature very rapidly and adult insects emerge immediately; thus, a spray applied at this time is more effective than when applied to the slowly-maturing twig galls. A spray applied to the leaves of *Quercus agrifolia* in early May and repeated the following year should effectively control the spread of *Callirhytis quercussuttonii*.

Types: The types of the bisexual generation and ten paratypes are in the collection of the U. S. National Museum. Other paratypes have been placed in the collection of the Los Angeles County Museum.

Host: *Quercus agrifolia* Nee.

Habitat: The types were reared from galls produced on oaks in containers at La Canada, California. Additional specimens were reared from galls collected on the native oaks in the Los Angeles area.

Acknowledgment: The writer wishes to express his appreciation to Gerhard Bakker of Los Angeles City College for the illustrations in this paper.

REFERENCES

- Ashmead, W. H. 1885. A bibliographical and Synonymical Catalogue of the North American Cynipidae, with descriptions of new species. Trans. Amer. Ent. Soc. 12:294.
- Bassett, H. F. 1881. New Cynipidae. Can. Ent. 13:54.
- Kinsey, A. C. 1922. Studies of Some New and Described Cynipidae (Hymenoptera). Ind. U. St. 9(53): 137.
- Weld, L. H. 1957. Cynipid Galls of the Pacific Slope. Privately published. Arlington, Virginia. 64 p.

A NEW GENUS OF XYSTODESMID MILLIPED WITH THE DESCRIPTION OF A NEW SPECIES FROM IDAHO (DIPLOPODA: XYSTODESMIDAE)

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ABSTRACT—A new genus and species of xystodesmid milliped, *Metaxycheir prolata*, is described from Idaho. This entity is a member of the subfamily Orophinae and is related to *Chonaphe* Cook. Orophinae has been modified to include the following genera: *Chonaphe* Cook, *Harpaphe* Cook, *Hybaphe* Cook, *Metaxycheir* Buckett and Gardner, *Orophe* Chamberlin, *Pamelaphe* Hoffman, and probably *Montaphe* Chamberlin.

During field work conducted in Idaho by Richard L. Westcott in 1965, casual collections of millipeds have revealed startling new species, one of which required the erection of a new family (Buckett

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Figs. 1 and 2, *Metaxycheir prolata*, n. gen., n. sp., holotype ♂: 1, right gonopod, mesal view; 2, right gonopod, cephalic view.

& Gardner, 1967), and another of which is described herein as representing an heretofore unknown new genus. Related to the genus *Chonaphe* Cook, *Metaxycheir*, new genus, possesses modifications which make it seem affiliated with the subfamily Orophinae.

***Metaxycheir* Buckett and Gardner, n. gen.**

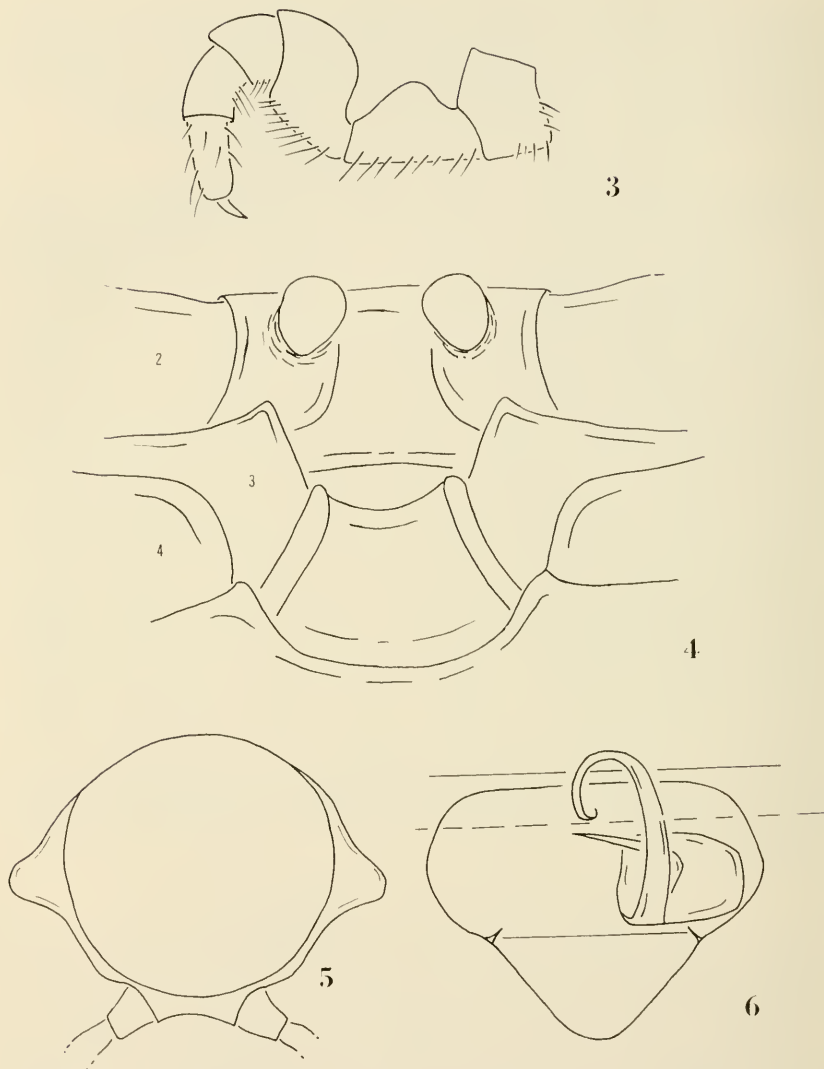
Type species: *Metaxycheir prolata* Buckett and Gardner, n. sp.

Diagnosis: Related to *Chonaphe* Cook and *Montaphe* Chamberlin, but differing from those genera in the femoral process of the gonopods being long, simple and slender; further differing from *Chonaphe* in the presence of a rounded anterior process on third coxae of male, in the absence of sternal swellings on fourth coxae and absence of sclerotized sternal remnant between gonopods.

Description: Head with coronal suture prominent; antennae short, extending caudad through third segment along paranotal margins; an oval sense area present on sixth antennal segment; body cylinder subcircular in cross-section, tergites smooth; paranota small, projecting strongly downward and originating at middle of body, posterior corners rounded and produced only slightly caudad; segment 19 with paranota distinct, of same relative size as on preceding body segments; legs generally long, slender, and sparsely setose; legs of anterior segments, however, with strongly setose mesal surfaces; prefemoral spines poorly developed; second legs with cylindrical coxal processes; third legs with small but distinct anterior coxal processes; legs 5-8 shorter and much more robust than succeeding legs; gonopod socket very large, excavated laterad, exposing gonopod coxae, posterior margin broadly rounded, a small sclerite protruding into socket from postero-lateral margin; socket extended to very near anterior margin of segment, the anterior portion concealed under segment 6; gonopods with coxae very broad, sub-quadrate, coxal apophyses apparently lacking; telopodite erect, immovably joined to coxa, composed of a long, slender tibiotarsus which curves cephalad in a spiral, and possesses a long meso-distally curving process which arises on cephalic face of femur; seminal canal originating on mesal surface of telopodite, crossing anterior surface of femur, indicating gonopod twisting of over 180°.

***Metaxycheir prolata* Buckett and Gardner, n. sp.**

Holotype male: Head with coronal suture prominent from vertex to region between antennae, then becoming no longer evident; a pair of setae situated on each side of suture, another adjacent pair of setae present between antennae; a paramedial pair of frontal setae present below antennae and separated by two-thirds inter-antennal width, and another pair slightly lower on frons and separated slightly more; ventral area of frons with transverse row of 10 stout setae; clypeus with 30 stout setae, lateral margins of clypeus each with a tuft of 8 long hairs; labrum with a transverse row of 24 setae; antennae short, reaching back along paranotal margins only through third body segment, and separated by distance equal to second antennal segment; antennal segments 2-6 sub-cylindrical, narrower at basal end; segment 6 longest, with an apical sense area on mesal margin; segments 2-5 all sub-equal in length and slightly shorter; antennal segment one short, cylindrical, as broad as long and twice as broad as segment 2 at base; seventh segment slightly shorter than first and slightly narrower than sixth, evenly rounded apically, possessing four terminal sense cones.



Figs. 3-6, *Metaxycheir prolata*, n. gen., n. sp., holotype ♂: 3, sixth leg, caudal view; 4, sternal and coxal regions of second, third and fourth legs, ventral view; 5, twelfth segment, posterior view; 6, gonopod aperture with left gonopod in situ (dashed line illustrates extent of overlap of sixth segment).

Body segments oval, almost circular, paranota small, rounded, projecting down about 50° from horizontal, produced from roughly the middle of the body; all tergites minutely pitted; collum much broader than head and just slightly narrower than segment 2, with strong dorsal curvature, lateral corners not visible from dorsal aspect; paranota of middle body segments with antero-lateral corners

more broadly rounded than the posterior corners, the latter projecting only slightly caudad, their apices acutely produced only on caudal body segments; lateral margins of paranota broadly rounded, the aperture of repugnatorial pore on caudal third of margin; tracheal aperture oval, anterior aperture of each segment more elongate than posterior aperture. Caudal four body segments increasingly reduced in size, segment 19 two-thirds length of 18, distinctly narrower, but with distinct paranotal projections proportional to segment size; epiproct sub-triangular, three-fourths as long as broad, lateral margins appearing strongly concave from dorsal aspect; mucro extending well beyond anal lips; epiproct with three pairs of lateral, two pairs of dorsal and one pair of apical setae; anal valves rough, coriaceous; anal lips strongly produced and lined by 2 pairs of setae; hypoproct smooth, sub-lenticular in shape, almost equally rounded cephalad and caudad.

Legs with femur longest, followed in length by tarsus, coxa, prefemur, post-femur, tibia; legs of anterior segments with many long setae on mesal surface; setae diminishing in number by eleventh leg-pair to two long setae on tarsi, a few more on other segments, with tarsi wholly covered by loosely spaced rows of short setae and bearing prominent apical claw; prefemoral spine greatly reduced, almost obsolete, its sub-tending seta of normal large proportions; second legs with large, cylindrical coxal processes; third pair of legs with low pair of sternal swellings, coxae with small anterior rounded projections; legs 5-8 extremely stout, their segments nearly as broad as long.

Sternal areas distinctly projected from body, slightly lower medially than laterally, with a shallow, inconspicuous transverse groove between leg-pairs of each segment, and a shallow median longitudinal groove.

Gonopods with coxae extremely wide laterally, though longitudinally only about twice as broad as telopodite, appearing trapezoidal from anterior aspect, with distal and basal margins horizontal, lateral and mesal margins sloping ventromesad; coxal apophysis apparently obsolete, a small semi-circular setiferous shelf projecting mesad from position basad of solenite origin; coxal foramen oval, subequal to circumference of coxa, and opening proximomesad; telopodite originating from disto-mesal region of coxa and produced directly meso-distad; femoral process branching from femur in proximal part of telopodite; tibiotarsus immediately curving gradually cephalad, this curvature increasing progressively in intensity, producing a spiral effect continuing for slightly more than one revolution; tibiotarsus half as wide and thick as basal region of telopodite, flattened, glabrous, narrowing gradually its entire length to acute, extremely narrow apex; femoral process blade-like, broader than tibiotarsus, produced from cephalo-lateral margin of femur, and curving evenly mesodistad, narrowing distally and notched at apex; solenite emerging from swollen area on meso-cephalic margin of coxa, fitting immediately into seminal canal at base of telopodite; seminal canal crossing anterior face to lateral margin of femur distad of origin of femoral process, proceeding up tibiotarsus on caudal surface near lateral margin for about half tibiotarsus length, then along center of surface to apex.

Specimens examined: Holotype male and two immatures, 7 miles northeast of Moscow, Nez Perce County, Idaho, 16 May 1965 (R. L. Westcott).

The type is deposited in the Type Collection, Department of Entomology, University of California, Davis.

The relationships of *Metaxycheir* present some interesting problems which should be considered in relation to the recent paper by Hoffman (1964), in which the subfamily Orophinae has been defined. Hoffman diagnosed the subfamily as follows: "A disjunct group within the Xystodesmidae characterized by the retention of a prominent, sclerotized gonopodal sternum; by the greatly elongated gonopod telopodites which are rotated through a 180° torsion just beyond the prefemur; by the presence of a distinct sensory area on the 6th antennomere; and by the reduction of the prefemoral spines of the walking legs."

As presently defined, the Orophinae must include *Metaxycheir*, as it possesses all of the characteristics mentioned above with the exception of the gonopodal sternum. This character should not impede inclusion of *Metaxycheir* into the Orophinae, however, for the reasons given below. *Chonaphe* Chamberlin is a genus apparently closely related to *Metaxycheir*. In addition to the characters of the Orophinae, *Chonaphe* possesses the following similarities to *Metaxycheir*: a long, spiral tibiotarsus of the gonopod, a prominent, expanded femoral process, a broad gonopodal coxa, a wide gonopod aperture with an excavated caudal margin and crassate anterior male legs. However, *Chonaphe* differs from *Metaxycheir* in possessing a prominent, stout gonopodal sternum. We agree with Hoffman that the presence of this sternum reflects a primitive condition, but also feel that certain generic lines such as *Metaxycheir* may have lost this condition through evolutionary reduction after the origin of the subfamilial group.

Two other genera which should be included in the Orophinae, as it now stands, are *Harpaphe* Cook and *Hybaphe* Cook. Both genera possess the gonopodal torsion, the elongate telopodite, and the sense organ on the sixth antennomere. *Hybaphe* and *Metaxycheir* possess greater prefemoral spine reduction than *Harpaphe* and *Chonaphe*, but this character, like the gonopodal sternite, probably experienced reduction subsequent to the origin of the Orophinae.

Thus, as it now stands, the subfamily Orophinae has been broadened to include *Chonaphe* Cook, *Harpaphe* Cook, *Hybaphe* Cook, *Metaxycheir* Buckett and Gardner, *Orophe* Chamberlin and *Pamelaphe* Hoffman. There are certain probable tribal affinities within the group, but prior to tribal division, the other genera of Northwestern North America and Asia must be more thoroughly studied.

REFERENCES

- Buckett, J. S. and M. R. Gardner. 1967. A new family of cavernicolous millipedes with the description of a new genus and species from Idaho. Michigan Ent. 1(4):117-126, figs. 1-8.
- Hoffman, R. L. 1964. A new subfamily of Xystodesmid millipedes from North America and China. Trans. Amer. Ent. Soc. 90:301-311, figs. 1-10.